BENDER
The Power in Electrical Safety™

LifeGuard® Series

Industrial Ground Fault Circuit Interrupters (GFCI)

Technical Bulletin

NAE1082321 / 09.2014

LifeGuard® Series
Ground Fault Circuit Interrupters

LifeGuard Series GFCI

Features

- For grounded and high-resistance grounded systems
- Voltage options up to 600 VAC
- Single-phase or three-phase AC systems
- Works on systems with DC components and systems with variable frequency drives (VFDs)
- Inverse time curve to help prevent nuisance tripping
- Options for adjustable trip level available
- Built-in ON and Alarm indications
- Test and Rest pushbuttons
- Option for digital display showing ground fault current in real-time; also supports BENDER's remote communication system
- Open type (no enclosure) models are recognized components
- Closed type (in enclosure) models with applicable voltages up to 100 A listed as Class A devices

Description

BENDER LifeGuard series ground fault circuit interrupters (GFCIs) extend the capabilities of standard GFCIs to the detection of ground leakage currents in all stages of power conversion equipment, from simple rectifiers to sophisticated variable frequency drives. LifeGuard series GFCIs can detect both AC and DC ground leakage current. A wide range of voltages, load amperages, and options are available. LifeGuard GFCIs are simple to install and require a minimal amount of connections.

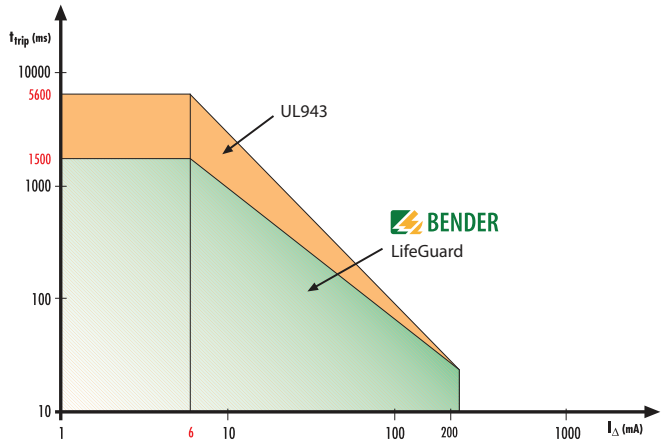
Applications

- Ground fault interruption in single- or three-phase AC systems up to 600 VAC
- Systems with DC components
- Systems with variable frequency drives (VFDs)

6 mA Trip Level with Inverse Time Curve

The standard LifeGuard model features a 6 mA trip level. The units trip in accordance with UL943, the standard for personnel protection. The minimum response time is 25 ms at leakage currents of 250 mA and above. A built-in inverse time curve helps to prevent nuisance tripping issues, particularly in systems with variable frequency drives (VFDs).

Models up to 100 A using system voltages 240 V line-to-line and below are listed as Class A ground fault circuit interrupters.



Additional Trip Level Options

For higher voltage systems, such as 480 V and 600 V systems, additional options are available, including:

- Options for 6 mA or 20 mA trip level with inverse time curve
- Steplessly adjustable trip levels with adjustable time delays

See ordering information for a complete list of options.

Enclosure

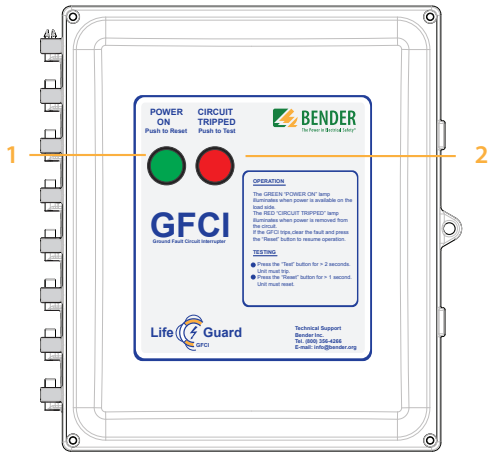
Standard models feature a NEMA 4X rated polycarbonate enclosure with hinged, lockable door. Additional options are available, including NEMA 4X stainless steel and NEMA 12 painted.

Digital Display / Communication Options

6 and 20 mA versions may have an optional digital display mounted to the door of the panel. The digital display mimics the test, reset, POWER, and TRIPPED functions of the standard model, as well as featuring a digital display which shows the ground fault current read in real-time.

Models utilizing the digital option installed without an enclosure support the use of BENDER's COM460IP communication module, which allows connecting multiple GFCIs to an Ethernet or Modbus/TCP network for remote notification and monitoring.

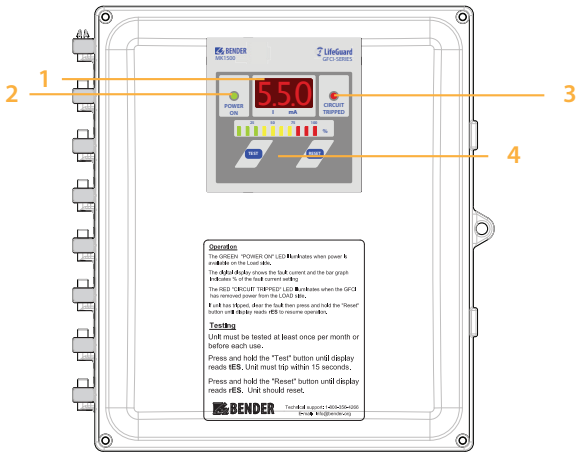
Enclosure Front - Standard Enclosure



1 - POWER LED / RESET button: Illuminates when the GFCI has received power and the device has not tripped / Resets the GFCI if faults have been cleared (momentary push).

2 - TRIPPED LED / TEST button: Illuminates when the GFCI has tripped / Performs a functional test of the GFCI (hold for at least 2 seconds).

Enclosure Front - Digital Display Option



1 - Digital display: shows ground fault current in real-time.

2 - POWER LED

3 - TRIPPED LED

4 - Separate TEST and RESET pushbuttons

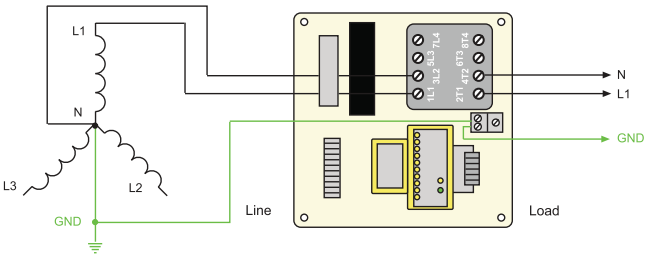
* Other enclosure options are available. Appearance and features may vary. Contact BENDER for more information.

Example Wiring Diagrams

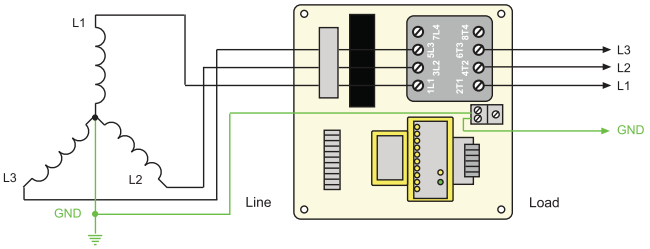
LifeGuard series GFCIs are easy to install and simple to wire. Typical installations only require wiring the system conductors and the ground wire.

Wiring LifeGuard GFCIs varies based on system voltage and amperage rating. Consult BENDER or the LifeGuard installation guide for more information.

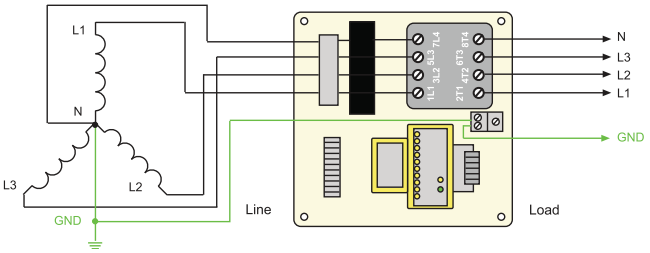
Single-Phase, Two-Wire Configurations (L1, N)



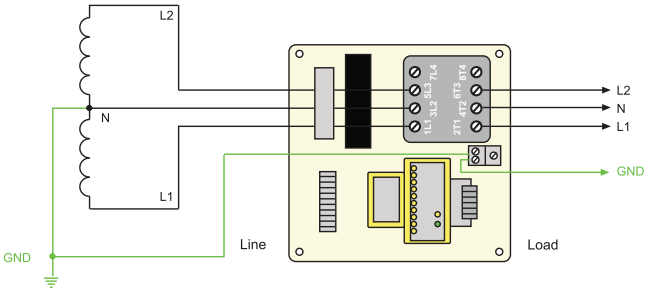
Three-Phase, Three-Wire Configurations (L1, L2, L3)



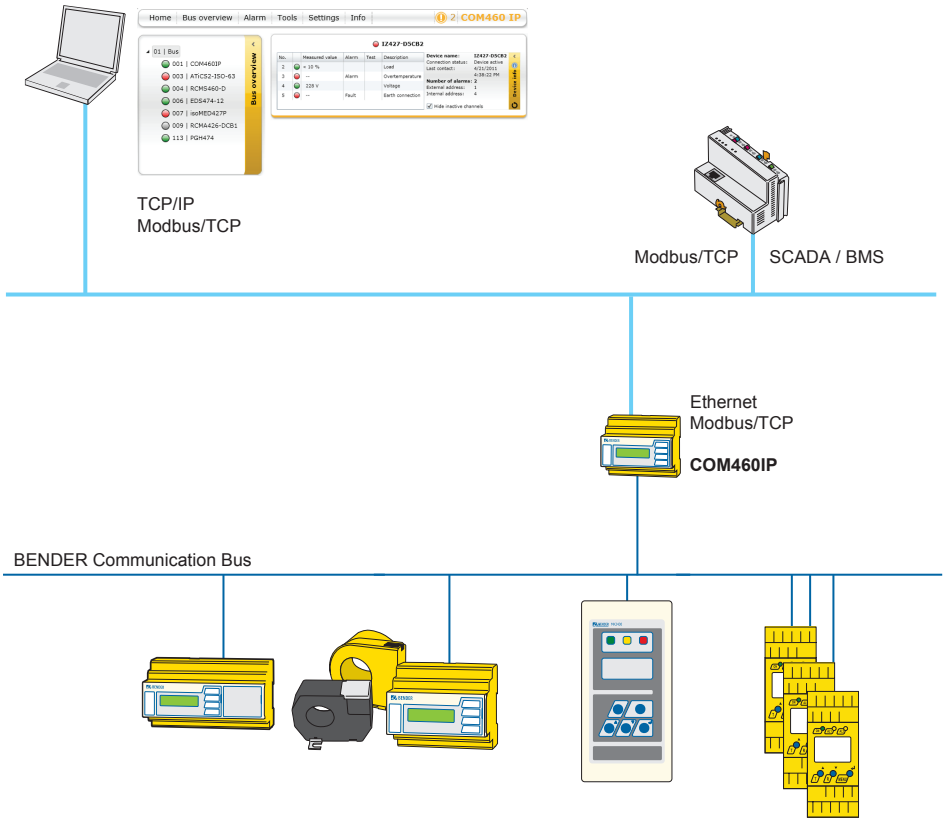
Three-Phase, Four-Wire Configurations (L1, L2, L3, N)



240/120 V Configurations (L1, L2, N)



Backplate Only Models With Digital Option: Remote Communication



When installing the digital version of BENDER's backplate-only GFCI in a single / isolated installation, provisions are made for connecting a single MK1500-D remote indicator. However, when connecting digital GFCIs together with RS-485, all of your GFCIs can be managed from a single location. BENDER's MK2430 remote indicating station provides alarm notification of all connected GFCIs from a single remote. Additionally, connecting to BENDER's COM460IP communication module allows for the managing of all connected GFCIs via a web browser based GUI, or from a Modbus/TCP system. Monitoring your facility's ground fault circuit interrupters has never been easier.

- Connects to standard Ethernet network
- Computers connected to the network can access device via web browser with Silverlight plugin
- Manage connected GFCIs, see status
- Optional visualization add-on allows for creating a plant/facility overview with GFCI locations and status
- Special mobile version for monitoring GFCI status via WiFi connected smartphone / tablet
- Modbus/TCP add-on allows for complete GFCI management from Modbus/TCP industrial ethernet system
- Connects to may other BENDER devices

Ordering Information

LG2	-	100	-	480	-	3/3	-	A	-	4X - P	-	D
		①		②		③		④		⑤		⑥

Code 1: Load Amperage (Choose One)

Code	Load Amperage
20	20 A
40	40 A
60	60 A
80	80 A
100	100 A

Higher load ampere ratings available upon request. Contact Bender for more information.

Code 2: System Voltage (Choose One)

Code	Voltage
120	120 VAC
208	208 VAC
240	240 VAC
277	277 VAC
480	480 VAC
575	575 VAC
600	600 VAC

Other voltages available upon request. Contact Bender for more information.

Code 3: Phases (Choose One)

Code	Quantity of poles / phases
1/2	Single-phase, two-wire (L1, N)
2/2	Single-phase, two-wire (L1, L2)
2/3	Single-phase, three-wire (L1, L2, N)
3/3	Three-phase, three-wire (L1, L2, L3)
3/4	Three-phase, four-wire (L1, L2, L3, N)

Code 4: Trip Level (Choose One)

Code	Trip Level	System Type	Timing
A	6 mA, fixed	AC / DC	Inverse time curve
B	20 mA, fixed	AC / DC	Inverse time curve
C	6 - 30 mA, factory adjusted	AC / DC	Inverse time curve
D	10 - 500 mA, field adjustable	AC / DC	0 - 10 s (adjustable)
E	10 mA - 10 A, field adjustable	AC only	0 - 10 s (adjustable)

Code 5: Enclosure (Choose One)

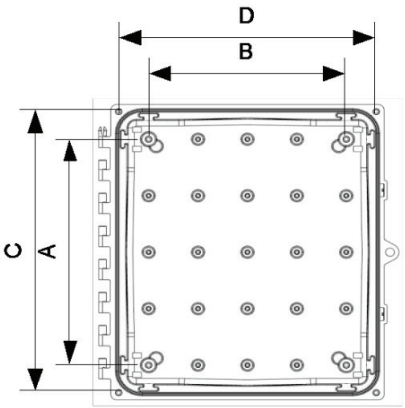
Code	Enclosure Type
4X-P	NEMA 4X polycarbonate enclosure with clamp and lockable option (recommended)
4X-SS	NEMA 4X stainless steel enclosure
N	No enclosure (backplate only)

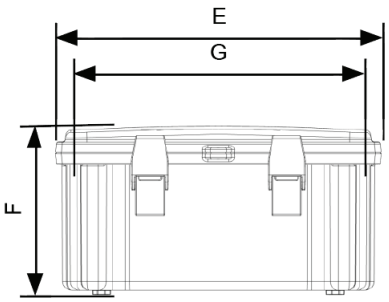
Code 6: Additional Options (Choose One)

Code	Enclosure Type
Nothing (blank)	No additional options
S	Emergency stop button
D	Door-mounted remote with digital display**

** Digital remote option is only available with options A, B, or C under Code 4. The digital display replaces the test/reset buttons on the front of the panel on the standard version. Test and reset pushbuttons are built into the digital display module.

Dimensions: Standard NEMA 4X Polycarbonate Enclosure							
GFCI Type	**Enclosure**	**A x B**	**C**	**D**	**E**	**F**	**G**
Compact	8x6x4	6.25" x 4.25" (159 x 108)	8.75" (222.5)	6.75" (171.5)	9.4" (239)	5.7" (145)	8.3" (211)
Standard	12x10x6	10.25" x 8.25" (260.5 x 209.5)	12.75" (324)	10.75" (273)	13.4" (340)	7.7" (195.5)	12.3" (312.5)
100 A models	14x12x6	12.25" x 10.25" (311 x 260.5)	14.75" (375)	12.75" (324)	15.4" (391)	7.7" (195.5)	14.3" (363)





Please contact BENDER or refer to the LifeGuard user manual for dimension information on other enclosure options.

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